CLAIMS

We claim:

1. A process for treating gas, water, or soil containing heavy metals by the step of contacting the heavy metal containing gas, water, or soil with a multi-functional sequestration agent selected from the group consisting of bauxite and modified bauxite.

2. A process for treating gas, water, or soil with bauxite in its natural or relatively natural form.

3. The process according to Claim 1, wherein the bauxite is modified by the steps of wetting with water, mild heating to temperatures below 300°C, and/or soaking in solutions of common acids, bases, or salts.

4. The process according to Claim 1, wherein when bauxite is applied for treatment of gases, sulfur is an essential ingredient in the co-precipitation of pollutant metals as sulfides.

5. The process according to Claim 1, wherein sulfur is present in the gas stream being treated or has been introduced into the treatment with the bauxite.

6. The process according to Claim 1, wherein when bauxite is applied to water or soil, sulfur is not an essential ingredient for removal of metal pollutants.

7. The method according to Claim 1, wherein said multi-functional sequestration agent ore is formed into a permeable vertical barrier.

We claim:

1. A method for treating water, sediment, or soil containing pollutants by the step of contacting the pollutant containing water, sediment, fractured rock, or soil with a multi-functional sequestration agent comprising bauxite in its relatively natural form.

2–6. Cancelled.

7. The method according to Claim 1, wherein said multi-functional sequestration agent is formed into a permeable vertical barrier.

8. The method according to Claim 1, wherein said multi-functional sequestration agent is formed into a permeable horizontal barrier or cap.

9. The method according to Claim 1, wherein said multi-functional sequestration agent is mixed with the environmental media to be cleaned.

10. A method for removing or inactivating microorganisms in an emission or in the environment comprising contacting the microorganism with a mineral selected from bauxite, copper ores, and mixtures thereof.

11. The method according to claims 1 or 10 wherein said bauxite is crushed.

12. The method according to claims 1 or 10 wherein said bauxite is granular.

13. The method according to claims 1 or 10 wherein said bauxite is a powder.

14. The method according to claims 1 or 10 wherein said bauxite is installed as a subsurface mineral ore barrier.

15. The method according to claims 1 or 10 wherein said bauxite is in a permeable barrier.

16 The method according to claim 15, wherein said permeable barrier is installed in the path of groundwater flow.

17. The method according to claims 1 or 10 wherein said water is groundwater.

18. The method according to claims 1 or 10 wherein said water is surface water.

19. The method according to claims 1 or 10 wherein said contacting is by mixing said bauxite with said water, sediment, fractured rock, or soil.

20. The method according to claim 1, wherein the pollutant is a heavy metal.

21. A sequester for treating water, sediment, fractured rock, or soil containing heavy metals comprising: bauxite in its relatively natural form mixed with said water, sediment, or soil.

22. The sequester according to claim 21, wherein said bauxite comprises granulated or powdered bauxite.

23. A permeable barrier for preventing migration of pollutants comprising:
a multi-functional sequestration agent comprising bauxite in its relatively natural form.

24. The permeable barrier according to claim 23, wherein said bauxite comprises granulated or powdered bauxite.